

CLAIMS

What is claimed is:

1. A roller cone drill bit, comprising:
5 a bit body;
three roller cones attached to said bit body and able to rotate with respect to said bit body;
a plurality of cutting elements arranged on each of the cones so that cutting elements on adjacent cones intermesh between the adjacent cones, the cutting
10 elements being arranged such that a projected area of said cutting elements in contact with a formation during drilling is substantially the same for each of the cones.
2. The drill bit according to Claim 1, wherein axial force exerted on the
15 bit during drilling is substantially balanced between the cones.
3. The drill bit according to Claim 1, wherein said cutting elements are disposed on each cone, such that work performed by each cone during drilling is substantially the same as the work performed each of the other cones.
- 20 4. The drill bit according to Claim 1, wherein a depth of penetration for each cutting element into a formation during drilling is substantially the same for each of the cones.
5. The drill bit according to Claim 1, wherein a distribution of axial force
25 on the bit is optimized.
6. The drill bit according to Claim 1, wherein said cutting elements comprise superhard inserts.
- 30 7. The drill bit according to Claim 1, wherein said cutting elements comprise tungsten carbide inserts.

8. The drill bit according to Claim 1, wherein said cutting elements comprise milled steel teeth.

9. The drill bit according to Claim 8, wherein said cutting elements
5 further comprise hardface coating.

10. A roller cone drill bit, comprising:
a bit body;
three roller cones attached to said bit body and able to rotate with respect to
said bit body;

5 a plurality of cutting elements arranged on each of the cones so that cutting
elements on adjacent cones intermesh between the adjacent cones, the cutting
elements being arranged such that a depth of penetration for the cutting elements into
a formation during drilling is substantially the same for each of the cones.

10 11. The drill bit according to Claim 10, wherein axial force exerted on the
bit during drilling is substantially balanced between the cones.

12. The drill bit according to Claim 10, wherein said cutting elements are
disposed on each cone, such that work performed by each cone during drilling is
15 substantially the same as the work performed by each of the other cones.

13. The drill bit according to Claim 10, wherein a projected area of said
cutting elements in contact with a formation during drilling is substantially the same
for each of the cones.

20 14. The drill bit according to Claim 10, wherein a distribution of axial
force on the bit is optimized.

15 15. The drill bit according to Claim 10, wherein said cutting elements
comprise superhard inserts.

16. The drill bit according to Claim 10, wherein said cutting elements
comprise tungsten carbide inserts.

30 17. The drill bit according to Claim 10, wherein said cutting elements
comprise milled steel teeth.

18. The drill bit according to Claim 17, wherein said cutting elements further comprise hardface coating.